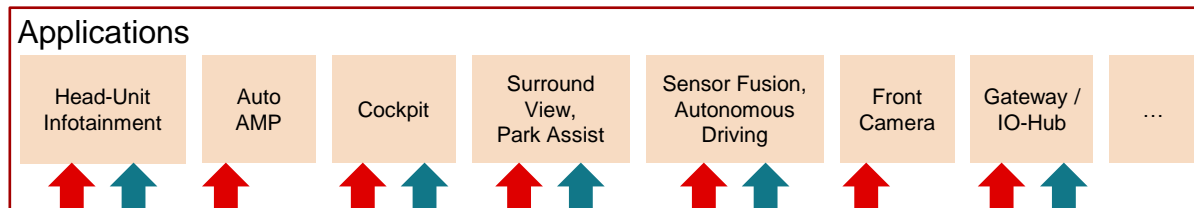


Getting started with Processor SDK Automotive for Jacinto™ 7 processors

Agenda

- Overview of Processor SDK Automotive for Jacinto 7
- Downloading and installing the SDK
- Getting started with the SDK

Jacinto 7 Software Development Kits (SDKs)



- 3P SDK running on MPU (A53, A72) to replace Processor SDK Linux (QNX, GHS Integrity, Android)

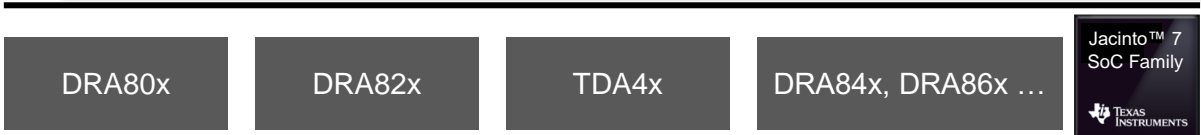
Arm® Cortex®-A

Processor SDK Linux Automotive (PSDKLA)

Arm® Cortex®-A
Arm® Cortex®-R
C66, C7x

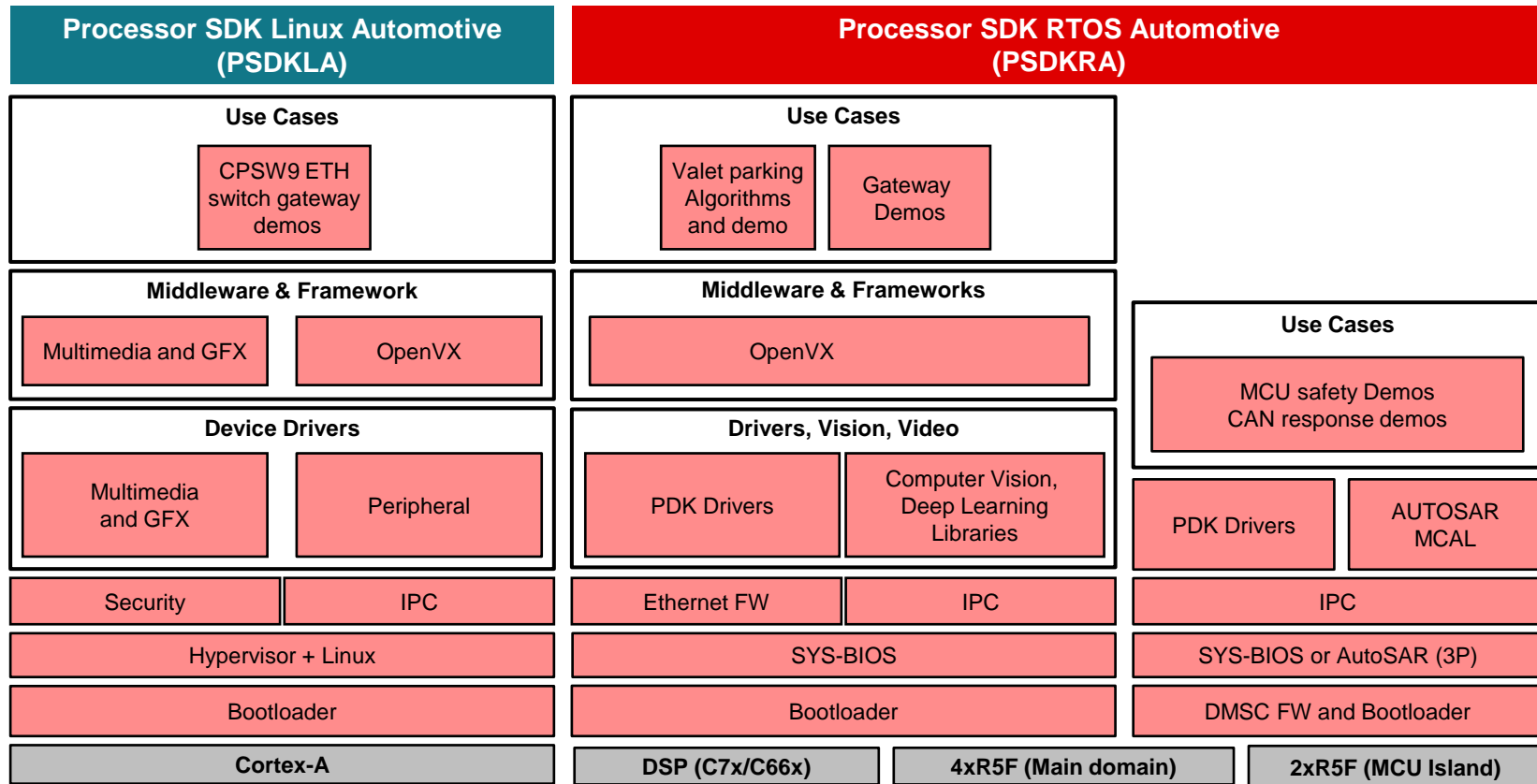
Processor SDK RTOS Automotive (PSDKRA)

- Linux and RTOS SDKs to provide baseline components – **They work across all Jacinto 7 platforms**
- “**Plug and play**” between SDKs to cater to integrated applications like cockpit as well as new markets like gateways, fusion, autonomous driving
- **3P SDK Integration:** Processor SDK RTOS running on remote cores to be reused as is



Common SDK packages across Jacinto 7 Silicon

TI Processor SDKs and AUTOSAR components



Agenda

- Overview of Processor SDK Automotive for Jacinto 7
- Downloading and installing the SDK
- Getting started with the SDK

Title	Description	Size
Toolchain downloads		
Toolchain for ARMv8	Link to download ARMv8 toolchain	
Toolchain for ARMv7	Link to download ARMv7 toolchain	
SDK installer downloads		
ti-processor-sdk-linux-automotive-j7-evm-06_01_01_02-Linux-x86-Install.bin	SDK Installer binary Linux 64-bit	2102090K
ProcessorSDKLinuxAutomotive_06_01_01_02_manifest.html	Software manifest for 06_01_01_02	2106K
Documentation		
SDK documentation	SDK Documentation for 06_01_01_02	
Release notes	Release notes for 06_01_01_02	
Data sheet	Data sheet for 06_01_01_02	
processor-sdk-linux-docs.tar.gz	SDK documentation tarball	36722K
SDK Individual Components - all of the below components are available through the Linux SDK installer		
tisdk-rootfs-image-j7-evm.tar.xz	J721e Linux Target File System	848754K
boot-j7-evm.tar.gz	J721e Linux Boot Partition	1386K

Step 1:
Download the installer.

Step 2:
Browse the User Guide.

Title	Description	
SDK Installer		
psdk_rtos_auto_j7_06_01_01_12.tar.gz	Source Package	
psdk_rtos_auto_prebuilt_06_01_01.tar.gz	Pre-built Package for Demo - Refer Getting Started Guide Chapter on how to use this	480
psdk_rtos_auto_ti_data_set_06_01_01.tar.gz	TI sample input data set - MUST DOWNLOAD and is required for running visi	615948
psdk_rtos_auto_ti_data_set_ptk_06_01_01.tar.gz	TI sample input data set for PTK - MUST DOWNLOAD and is required for run	205
Documentation		
Release Notes - START HERE	Release Notes and documentation home	481
psdk_rtos_auto_j7_06_01_01_docs_only.tar.gz	Documentation only Package	474
Code Composer Studio Addon		
ti_emupack_setup_8.3.1.00007_linux_x86_64.bin	CCS 9.x Emulation pack for Jacinto7 Platform - Linux Installer	48954K
ti_emupack_patch_j7es_8.3.1.00007_linux_x86_64.bin	CCS 9.x Addon Emulation pack for J721E SOC - Linux Installer	11106K
ti_emupack_setup_8.3.1.00007_win_64.exe	CCS 9.x Emulation pack for Jacinto7 Platform - Windows Installer	73586K
ti_emupack		10730K
C7x Training		
TI_C7X_DSP_TRAINING_00.05.zip	C7x Training - iPython notebooks stored as static HTML pages with code samples and training videos	946850
TI_C7X_DSP_TRAINING_00.05_INTERACTIVE.zip	C7x Training - INTERACTIVE iPython notebooks with code samples and training videos	935962

Step 1:
Download the installer.

Step 2:
Download demo data set.

Step 3:
Browse the User Guide.

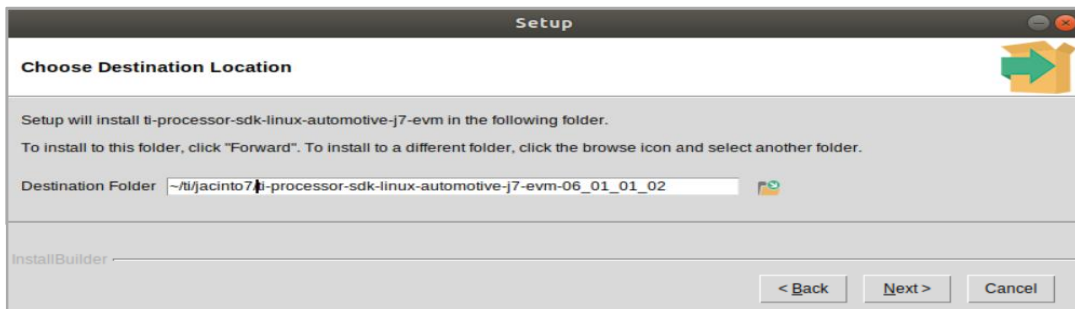
IMPORTANT:

Both PSDKLA and PSDKRA **MUST** be downloaded and installed.

Installation of PSDKLA

```
$ mkdir -p ~/ti/jacinto7
```

```
~/work/sdk$ chmod +x ti-processor-sdk-linux-automotive-j7-evm-06_01_01_02-Linux-x86-Install.bin  
~/work/sdk$ ./ti-processor-sdk-linux-automotive-j7-evm-06_01_01_02-Linux-x86-Install.bin
```



```
$ firefox ti-processor-sdk-linux-automotive-j7-evm-06_01_01_xx/docs/linux/index.html
```

Step 1: Create a folder to install.

Step 2: Download the installer to this folder. Add execute (“+x”) permissions

Step 3: Install the SDK.

Step 4: Follow the steps and specify a destination folder.

Step 5: Open this file to start browsing the User Guide.

IMPORTANT:

Make sure to do these steps on an Ubuntu 18.04 64b and above system.
100GB of free space is recommended.

- 1. Overview
- 2. Release Specific
- 3. Foundational Components
- 4. Examples and Demos
- 5. How to Guides
- 6. Documentation Tarball

[Docs](#) » Processor SDK Linux Software Developer's Guide

Processor SDK Linux Software Developer's Guide

Welcome to the Processor SDK Linux Software Developer's Guide

Thank you for your interest in the Processor SDK Linux. This guide provides information you need to get started with the Processor SDK Linux. We are always striving to improve this product. Please let us know if you have any feedback or suggestions. We are specifically running one of the Software Architectures available, embedded Linux. We are always striving to improve this product. Please let us know if you have any feedback or suggestions.

Find details of PSDKLA components here.

Find EVM setup information, how-to processes, and useful developer tips here.

Getting Started Guide	Directory Structure Overview
Release Notes	How To Guides
Examples and Demos	Building the SDK
Linux Software Stack	GPLv3 Disclaimer
Technical Support	

Start from here.

Quick Start Guide

Thanks for your interest in Processor SDK Linux. In this section we describe the basic steps needed to start development using the SDK. We will

1. Steps for SDK installation

Installation of PSDKRA

```
$ mkdir -p /ti/j7
```

```
$ cd /ti/j7  
tar xf psdk_rtos_auto_j7_xx_xx_xx_xx.tar.gz
```

```
$ cd /ti/j7  
tar xf psdk_rtos_auto_j7_xx_xx_xx_xx.tar.gz
```

```
$ firefox  
psdk_rtos_auto_j7_xx_xx_xx_xx/index.html
```

Step 1: Create a folder to install.

Step 2: Download the installer to this folder.

Step 3: Install the SDK.

Step 4: Open this file to start browsing the User Guide.

IMPORTANT:

Make sure to do these steps on an Ubuntu 18.04 64b and above system.
100GB of free space is recommended.

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4. Release Notes

5. EVM Setup for J721e

6. CCS Setup for J721e

7. Data Sheet for J721e

8. Developer Notes

Docs » 2. Getting Started

2. Getting Started

Start from here.

2.1. Build from Source

Important

To run many of the demos in this SDK, the companion Processor SDK Linux Automotive SDK for Jacinto 7 also needs to be downloaded separately.

Find details of PSDKRA components here,

Refer below table to get started with topics of your interest.

Find EVM setup details here.

Gateway	<ul style="list-style-type: none">• See ethernet firmware [LINK]• See gateway demos [LINK]
---------	---

Find useful developer tips and how to processes here.

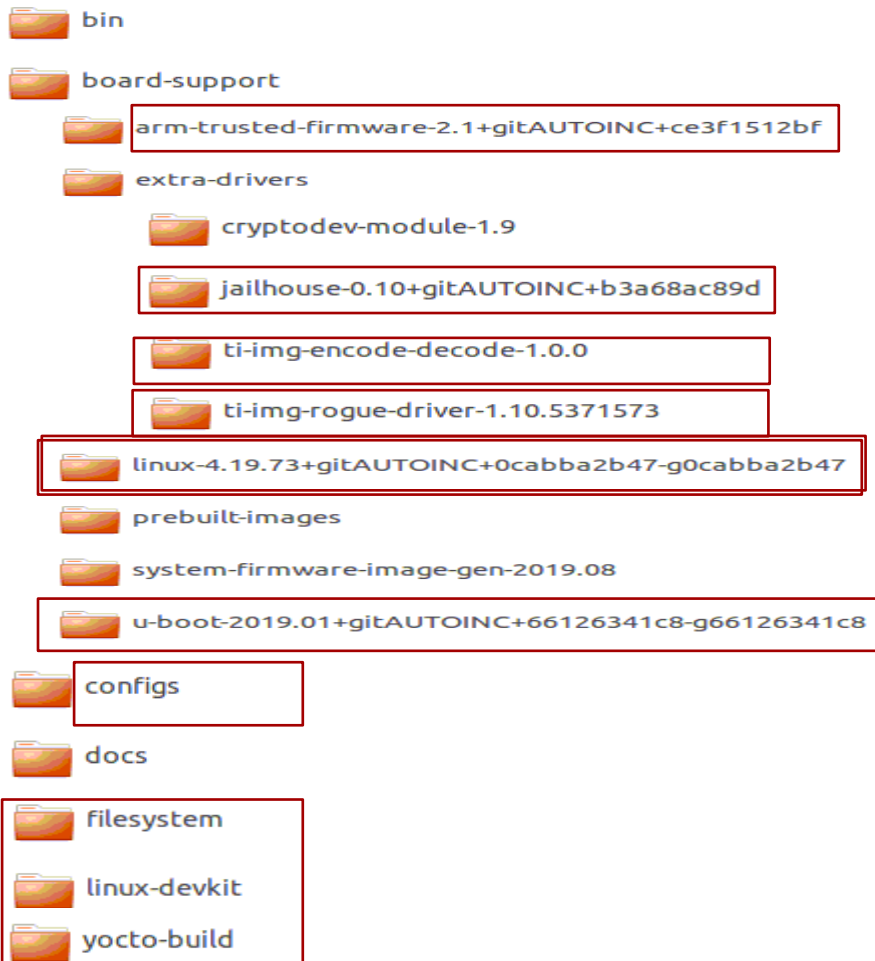
RTOS Device Drivers	See PDK [LINK]
---------------------	--------------------------------

2.2. Running Out of the Box Demos

2.2.1. Step 1: Download Prebuilt PSDKRA

Agenda

- Overview of Processor SDK Automotive for Jacinto 7
- Downloading and installing the SDK
- Getting started with the SDK
 - SDK components
 - Setting up the build environment
 - Running the out-of-box demonstration



Processor SDK Linux Automotive (PSDKLA)

Use Cases

CPSW9 ETH
switch gateway
demos

Middleware & Framework

Multimedia and GFX

OpenVX

Device Drivers

Multimedia
and GFX

Peripheral

Security

IPC

Hypervisor + Linux

Bootloader

ARM Trusted Firmware

Cortex-A

Tools

Yocto

Toolchain

IMPORTANT:

Ethernet Firmware source files, demos and OpenVX are included as part of PSDKRA package.

Search docs

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1.1. Overview Getting Started
Guide

1.1.1. Getting Started Guide

1.1.2. Installing the SDK

1.1.3. Setting up host
environment

1.1.4. Creating SD card on Linux

1.1.5. Building baseport
components

1.1.6. GCC ToolChain

Quick Start Guide

ti-proc-processor-sdk-linux-automotive-j7-evm-xx_xx_xx_xx/docs/linux/index.html

1.1.3. Setting up host environment

Overview

Run the following script after the installer setup is done.

```
./sdk-install.sh
```

Step 1: Setup toolchain.

This will setup the required toolchain in the linux-devkit directory. It will also setup the default paths in the Rule

Note

The sdk-install.sh script is to be run only once. after the installation, the script will be deleted automatically. M

Then run the script:

```
./setup.sh
```

Step 2: Setup environment, utilities.

- Verification that the Linux host is the recommended Ubuntu LTS version
- Installation of required host packages
- Target FileSystem installation
- NFS setup
- TFTP setup
- Minicom setup
- uboot setup
- Load uboot script

1.1.5. Building baseport components

1.2. Building filesystem using yocto

1. Overview

1.1. Overview Getting Started Guide

1.1.1. Getting Started Guide

1.1.2. Installing the SDK

1.1.3. Setting up host environment

1.1.4. Creating SD card on Linux

1.1.4.1. Overview

1.1.4.2. Partitioning SD card

1.1.4.3. Select the SD Card Device

1.1.5. Building baseport components

Run Instructions

1.1.4. Creating SD card on Linux

1.1.4.1. Overview

The Linux SDK includes a script in the `<SDK INSTALL DIR>/bin` directory named `mksdboot.sh`. cards by partitioning and formatting them so that target can boot using the boot images and f

1.1.4.2. Partitioning SD card

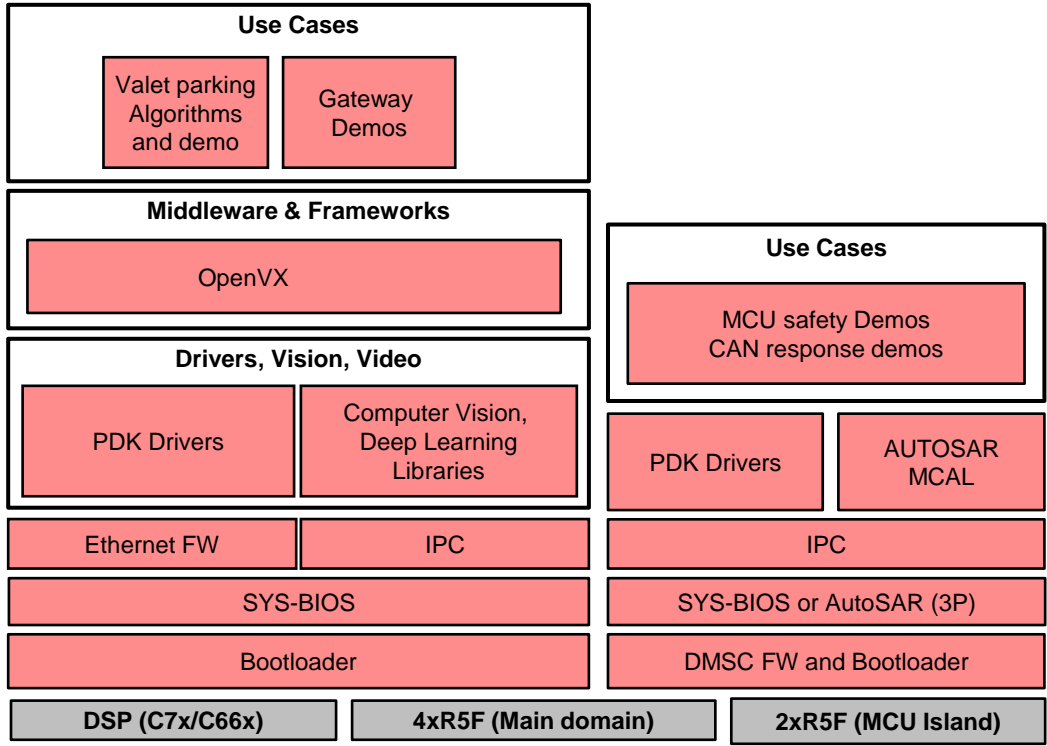
No matter which use case above that you are creating an SD card for the following steps are th

The `mksdboot.sh` script can be run from any location but must be run with `root` permissions. execution of the script. For example:

```
sudo <SDK INSTALL DIR>/bin/mksdboot.sh --device /dev/sdX --sdk <SDK INSTALL DIR>  
#Replace the /dev/sdX with appropriate device name
```

- bios_6_76_03_01
- dsplib_c66x_3_4_0_0
- ethfw
- gateway-demos
- imaging
- ivision
- mcusw
- mmalib_01_00_00_00
- ndk_3_61_01_01
- ns_2_60_01_06
- pdk
- perception
- psdk_rtos_auto
- remote_device
- tiadalg_src_j7_00_05_01_00
- ti-cgt-arm_18.12.1.LTS
- ti-cgt-c6000_8.3.2
- ti-cgt-c7000_1.2.0.STS
- tidl_j7_01_00_01_00
- tiovx
- video_codec
- vision_apps
- vxlib_c66x_1_1_4_0
- xdais_7_24_00_04
- xdctools_3_55_02_22_core
- index.html

Processor SDK RTOS Automotive (PSDKRA)



IMPORTANT:
Additional tools (e.g., A72 GCC compiler) need to be downloaded separately.
psdk_rtos_auto_j7_06_01_01_xx/vision_apps/docs/user_guide/ENVIRONMENT_SETUP.html

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 - ▶ Vision Apps Introduction
 - ▼ Build and Run

Build Environment Setup

- ▼ Vision Apps User Guide
 - ▶ Vision Apps Introduction
 - ▼ Build and Run

Build Instructions

- ▼ Vision Apps User Guide
 - ▶ Vision Apps Introduction
 - ▼ Build and Run
 - ▶ Build Environment Setup
 - ▶ Build Instructions

Run Instructions

- ▼ Run Instructions
 - ▶ IMPORTANT NOTES
 - ▼ Run vision apps on EVM in Linux+RTOS mode (via SD card)
 - ▶ Step 1: Prepare SD card for boot (one time only)
 - ▶ Step 2: Copy test data to SD card (one time only)
 - ▶ Step 3: Copy executable files to SD card (first time)
 - ▶ Step 4: Run on EVM
 - ▶ Sample logs
 - ▶ Run vision apps on PC in PC emulation mode
 - ▶ Trouble shooting build and run errors
 - ▶ Applications / Demos
 - ▶ TI Disclaimer
 - ▶ APIs

IMPORTANT NOTES

- **Make sure additional components and network proxies are setup as mentioned preceding to building PSDKRA**
- **Make sure you dont skip any of the steps mentioned below**
- `#{PSDKRA_PATH}` refers to the path where Processor SDK RTOS Automotive (PSDKRA) is installed
- `#{PSDKLA_PATH}` refers to the path where Processor SDK Linux Automotive (PSDKLA) is installed
- All folders like, `pdk`, `tienvx`, `vision_apps` mentioned in the user guide are relative to `#{PSDKRA_PATH}` otherwise.
- The build is tested on Ubuntu (x86_64) 18.04 system and may not work on earlier or later versions.
- 20GB of free space is required to install and build PSDKRA
- Make sure you have sudo access

Run vision apps on EVM in Linux+RTOS mode

For more information

- Download Processor SDK Automotive for Jacinto 7 processors:
<http://www.ti.com/tool/PROCESSOR-SDK-DRA8X-TDA4X>
- Processor SDK Linux Automotive (PSDKLA) User Guide:
<http://www.ti.com/tool/PSDKLA/docs/linux/index.html>
- Processor SDK RTOS Automotive (PSDKRA) User Guide:
<http://www.ti.com/tool/PSDKRA/index.html>
- Order the TDA4VMx evaluation module: <http://www.ti.com/tool/TDA4VMXEVM>
- Order the DRA829Vx evaluation module: <http://www.ti.com/tool/DRA829VXEVM>
- For additional questions, refer to the E2E Community Forums:
<https://e2e.ti.com/support/processors/f/791>



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